Original Research

The Indonesian Journal of Public Health
Vol 20 No. 2 August 2025
p- ISSN 1829-7005 e- ISSN 2540-8836

QUALITY OF LIFE OF THE ELDERLY IN THE RURAL REGION OF DELHI, INDIA

Ankit Yadav[1*], G.S. Meena[2], Nandini Sharma[3], Rajesh Kumar[4]
[1] Assistant Professor, Department of Community Medicine, Teerthanker Mahaveer Medical College and Research Centre, Moradabad, Uttar Pradesh, India
[2] Former Director Professor, Department of Community Medicine, Maulana Azad Medical College, Delhi, India
[3] Former Director Professor, Department of Community Medicine, Maulana Azad Medical College, Delhi, India
[4] Director Professor, Department of Community Medicine, Maulana Azad Medical College, Delhi, India
Corresponding address: Ankit Yadav
Email:ankityadav05sep@gmail.com

ABSTRACT

Introduction: The proportion of elderly people in India has sharply increased. According to World Population Prospects 2019, the elderly population will be around 19% by 2050. Due to this, there remains a concern about the quality of life (QOL) of the elderly. There is a scarcity of knowledge about QOL and related factors influencing the elderly population, particularly in rural areas of northern India. So, this study was conducted. **Aim:** To study the quality of life in the elderly aged sixty years and above using WHOQOL-BREF in rural Delhi. **Methods:** Cross-sectional study in the community. People aged 60 and older in the study area were enrolled using simple random sampling. A total of 195 elderly people were enrolled in the study after obtaining consent. The data was imported into MS Excel and evaluated with SPSS version 25. For descriptive and inferential statistics, p-values of 0.05 were deemed statistically significant. **Results:** Among the 195 participants, 40.5% were men and 59.5% were women. The proportion of married elderly was 47.7% while the rest were widowed, and 47.2% of the elderly were illiterate. Out of 195 participants, 155 were living in a joint family. Physical health (60.76±11.31), Psychological (67.90±8.71), Social relationship (90.81±12.31), and Environment domain (83.23±11.59) had the highest mean WHOQOL-BREF scores. **Conclusions:** The QOL score was highest in the social relationship category and lowest in the physical health category. Researchers can conduct a qualitative study in the future to determine the factors affecting quality of life.

Keywords: Quality of life (QOL), Elderly, Rural, WHOQOL-BREF

INTRODUCTION

Aging at the biological level is the accumulation of an extensive range of cellular and molecular damage. With time, physiological reserves decrease due to these damages, resulting in increased disease risk and a decrease in the individual's capacity (World Health Organization, 2015) According to a report on ageing, "healthy aging" is defined as the process of developing and maintaining the functional ability that enables well-being in older age (World Health Organization, 2015).

Population ageing is described as an inevitable and irreversible demographic reality in the 2017 India Aging Report by UNFPA, and it is found to be associated with improved and advanced medical and health care and a decline in fertility. The elderly are not the only ones affected by aging; it affects everyone in society, directly or indirectly (UNFPA India, 2017) There is a sharp growth in the population of elderly persons in India, thus acquiring the label of "an ageing nation" (Ingle and Nath, 2008).

In India, there are around 104 million elderly people, 51 million of whom are men and 53 million of whom are women. The percentage of elderly persons has dramatically increased, from 5.6% in 1961 to 8.6% in 2011 (Ministry of Statistics and Program Implementation- Government of India, 2016) World Population Prospects 2019 reported that India will have 19.5% of

Cite this as: Zari, A.P., Nurmala, I., Sulistyowati, M and Syaiful, D.A, (2025). Determinants of Physical Activity Behavior in High School Adolescents in Gresik Regency. The Indonesian Journal of Public Health, 20(**2**), 3-14. https://doi.org/10.20473/Ijph.v20i2.2025.3-14

 Received 8 November 2023, received in revised form 25 May 2024, Accepted 27 May 2024, Published online: August 2025.
Publisher by Universitas Airlangga

the elderly from the total population in 2050 (Kapoor et al., 2021).

According to the 2011 census, the old population accounted for 8.0% of the total population, with elderly men accounting for 7.7%, somewhat less than elderly women at 8.4%. The rural population comprises of 8.1% elderly, of whom 7.8% are male and 8.4% are female. The urban population consists of 7.9% elderly, out of which 7.6% were males and 8.2% were females. While only 5.9% of the total population in Delhi was elderly, 5.7% were males and 6.2% were females (Office of Registrar General India (ORGI) divisions- Government of India, 2011) The majority of the elderly people live in rural areas (71%), while only 29% reside in the urban part of the country. (Ministry of Statistics and Program Implementation-Government Of India, 2016).

A significant factor or aspect of concern during the elderly life phase is quality of life. Quality of life (QOL), as defined by the World Health Organization (WHO), is "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" (World Health Organization, 2024) The Centers for Disease Control and Prevention (CDC) defines QOL as "a broad multidimensional concept that usually includes subjective evaluations of both positive and negative aspects of life" (Centers for Disease Control and Prevention, 2024) Quality of life is influenced by a multitude of factors, including health, social relationships, economic stability, and the environment (Mudey et al., 2011) However, demographic and Socioeconomic factors are basic determinants, shaping access to healthcare, social support, and opportunities for economic security. Research indicates that demographic aspects such as age, gender, and rural versus urban residency significantly affect the quality of life due to variations in resource availability and cultural expectations (Harwood, Sayer and Hirschfeld, 2004) Similarly, Socioeconomic factors, including income, education, and occupational history, play a critical role in determining living conditions, healthcare access, and overall well-being in older adults (Qadri et al., 2013) These factors, therefore, provide a framework for studying quality of life and have been prioritized in this research.

Despite extensive research on the quality of life of the elderly nationally, most studies primarily focus on urban populations or specific health-related outcomes. There is limited evidence on the quality of life of the elderly residing in rural regions, especially in the context of Delhi, where Socioeconomic and demographic factors uniquely intersect. Furthermore, existing research often lacks a comprehensive approach that integrates demographic and socioeconomic factors, using standardized tools like WHOQOL-BREF. Hence, this study aims to evaluate the quality of life in elderly adults aged sixty and above in rural Delhi using the WHOQOL-BREF, specifically focusing on how demographic and socioeconomic factors influence QOL.

METHODS

It is Cross-sectional research conducted in the rural field practice region of a medical institution in New Delhi. This study was registered in the Clinical Trials Registry of India (Registration Number: CTRI/2019/04/018363). The study was conducted from September 2018 to August 2020, during which data were collected for one year, i.e., from January 2019 to December 2019. The study population consists of all elderly (aged sixty years and older) residing in the research field area. All persons aged sixty years and older, including those who have been residents of the study area for at least the past six months, were included in the study. Individuals who are severely ill, debilitated, or unable to communicate, and those

individuals who will not be available after three visits or contacts, were excluded from the study.

For the calculation of sample size (Indrayan, 2006), we used this formula:

$$n = \frac{Z^2_{1-\alpha/2}\ \sigma^2}{d^2}$$

Where n = sample size, $Z_{1-\alpha/2}$ = 1.96, value of standard normal variate corresponds at level of significance "α" of 0.5, σ = standard deviation, and d = specified precision on either side of the mean. Based on a previous study (Kumar, Majumdar and Pavithra, 2014) the mean score and standard deviation for the WHOQOL-BREF scale are 49.74 (10.21) and for its different domains are: Physical domain = 55.17(12.50), psychological domain = 54.61(11.92), social relationship domain = 36.68(16.44), and environmental domain = 52.49(12.08). The values to be put in the formula are $Z_{1-\alpha/2}$ = 1.96, σ = 16.44, and d = 7% of 36.68 = 2.56. The sample size is calculated as 154 by substituting the above values into the formula. Considering a non-response rate of 20%, the sample size comes out to be 189. Simple random sampling was done for the participants. All eligible study participants enrolled in the study after obtaining written informed consent.

A certificate for ethical approval was received prior to the initiation of the study from the institution's ethics committee with a letter number. F.No.17/IEC/MAMC/2018/03.

In this study, a house-by-house survey was carried out in the designated village, and the total number of people who met the inclusion criteria was enumerated. The individuals' information was collected using a pre-tested, pre-designed, semi-structured interview schedule including details about age, marital status, education status, type of family, socioeconomic status, status as head of family, employment status, financial dependency status, presence of self-reported health complaint and presence of diagnosed disease and presence of physical activity, and the WHOQOL-BREF scale was used to determine quality of life (available in both Hindi and English) (World Health Organization, 2012) WHOQOL-BREF consists of 4 domains-Physical Health, Psychological, Social relationships, and Environment. It has a good internal consistency as Cronbach's alpha for each of the 4 domains ranges from 0.66 (for domain 3) to 0.84 (for domain 1). Contains 26 questions (Available in both Hindi and English). A response key was prepared to keep the interview schedule simple, and the responses were filled in according to the key codes. It ranges from 0 to 100. The higher the score, the better the quality of life. The questions were translated into the local language, Hindi, and then converted to English to ensure the meaning remained consistent.

All eligible participants who were willing to give consent for participation in the study were included. If the study participants were unavailable at home on the day of the visit, then they were contacted in subsequent visits. If a specific house was determined to be locked despite three visits, the eligible elderly were removed from the study. The investigator first explained the nature and goal of the research to the eligible participants, and a patient information sheet was given to them. Written informed consent was obtained from those who were interested in participating. All study subjects were interviewed, and the investigator filled out the interview schedule. The interview schedule was converted to Hindi and then retranslated into English to ensure the meaning remained consistent. Relevant examinations and measurements were done after consent. The privacy and confidentiality of the study subjects were maintained. Relevant health education was provided, and referrals to the nearby health care centre were made if necessary.

Operational definitions were used to maintain uniformity in data collection. An adult aged 60 years and older is considered elderly. An elderly person who relies on

others (i.e., a spouse, children, grandchildren, etc.) for things like money, food, or clothes is considered financially dependent. The elderly were doing physical activity for a minimum of 150 minutes of moderate-intensity aerobic physical activity throughout the week or a minimum of 75 min of vigorous-intensity aerobic physical activity during the week, or an equivalent combination of both, then they are considered doing physical activity; otherwise, no physical activity (World Health Organization, 2011) Self-reported comorbidities include both health complaints and diagnosed diseases. Any health complaint or illness reported by the participants or experienced within the last 3 months is categorized as health-related complaints. When the elderly had documents/ doctor's prescriptions to support their diagnosis, they were considered a case of diagnosed disease.

The data was put into MS Excel and cleaned. SPSS (Statistical Package for the Social Sciences for Windows, Version: 25.0, IBM Corporation, Armonk, NY, United States) was used for the analysis of data. Frequencies and percentages were used to report categorical variables. The Quantitative variables were represented by means and their standard deviations. Cross-tabulation was used to determine the relationship between independent and dependent variables. A 2-tailed p-value of 0.05 was used to determine statistical significance. Statistically significant difference between groups demonstrated by one-way ANOVA.

For multivariate analysis, the total QOL score for each participant is determined by adding the responses to each item in the questionnaire. The median value of the total QOL score was used as a cut-off to categorize the total QOL score into good QOL or poor QOL. Bivariate logistic regression determines the unadjusted association between individual-level characteristics and QOL scores. Bivariate logistic regression was used to measure the association among various sociodemographic characteristics with QOL, which is expressed as an unadjusted odds ratio with a confidence interval of 95% (CI). The multivariate logistic regression model incorporated all the characteristics with a p-value of less than 0.20 from bivariate regression. The adjusted odds ratio with a 95% confidence interval was reported for all variables included in the multivariate model.

RESULT

A total of 195 elderly people, aged 60 to 99 years, were interviewed after fulfilling the eligibility criteria. The score of WHOQOL-BREF for all the participants (Minimum, Maximum, and Mean) in all respective domains is given in Table 1. The mean score was maximum in the social relationship domain, while it was minimum in the physical health domain.

Table 1. WHOQOL-BREF Scores in All Domains (N=195).

Domains of QOL	Minimum score	Maximum score	Mean score (SD)
Physical health	21.43	100.00	60.76 (11.31)
Psychological	41.67	91.67	67.90 (8.71)
Social relationship	33.33	100.00	90.81 (12.31)
Environment	53.13	100.00	83.23 (11.59)
Mean QOL	50.41	91.89	75.68 (8.60)

When the score of each domain was divided into four equal groups, most participants were in the group with a score of 50-75 for the physical health and psychological domains, while with a score of 75-100 for the Environment and social relationship domains. No participant lies in the 0-25 score group for social relationship, psychological, and environmental domains, while for the environment domain, no participants lie in the 25-50 score group of QOL. (Figure 1)

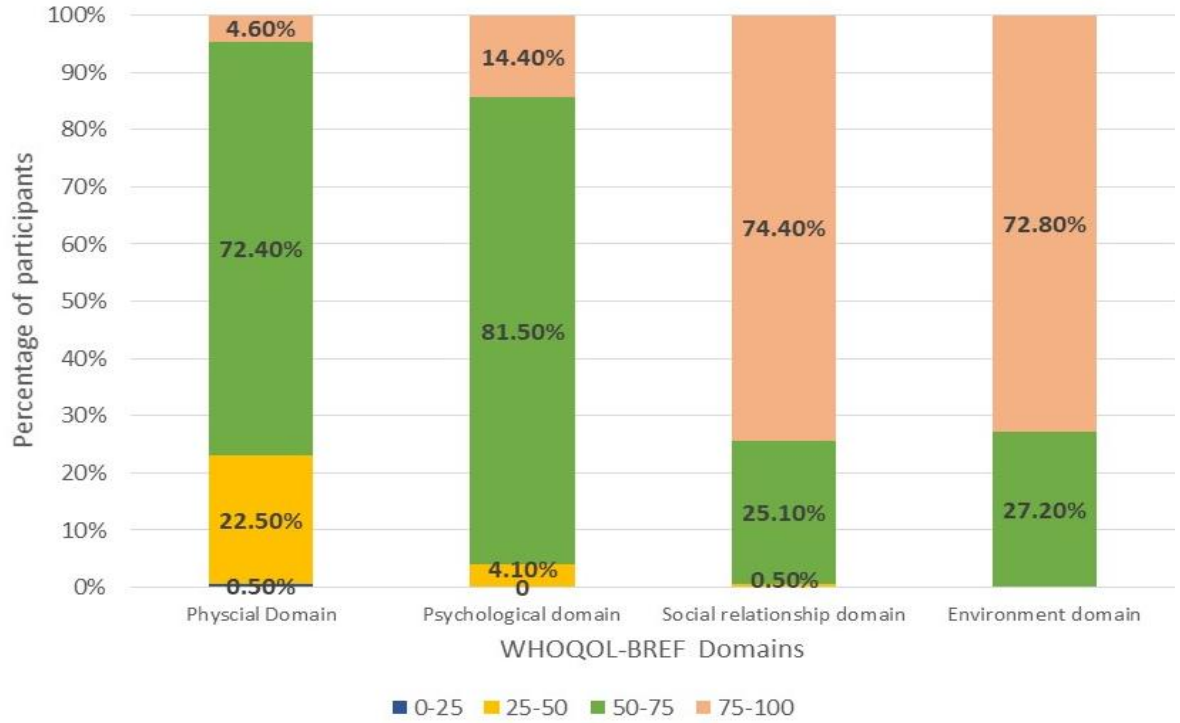

Figure 1. Participants' distribution in different domains of WHOQOL-BREF

When asked about the quality of their lives (self-rating), 74 participants (37.9%) said that their quality of life was neither good nor poor; 66 (33.8%) rate their quality of life as good; 34 (17.5%) rate their quality of life as poor; while only 20 participants (10.3%) rate their quality of life as "very good," and 1 participant (0.5%) rates it as "very poor."

When asked about satisfaction with their health as per WHO-QOL BREF scale, 71 elderly (36.4%) were neither dissatisfied nor satisfied, 65 (33.3%) were satisfied with their health, 37 (19.0%) were dissatisfied, only 19 (9.7%) were very satisfied with their health, and only 3 (1.5%) were very dissatisfied with their health.

The distribution of participants according to gender is given in Table 2.

Table 2. Participants' distribution according to sociodemographic characteristics (N=195).

Variable	**Male (79) 'n' (%)**	**Female (116) 'n' (%)**	**Total (195) 'n' (%)**
Age (in years)			
60-69	48 (60.8)	74 (63.8)	122 (62.6)
70-79	22 (27.8)	29 (25.0)	51 (26.2)
80-89	6 (7.6)	10 (8.6)	16 (8.2)
90 and above	3 (3.8)	3 (2.6)	6 (3.1)
Marital status			

Variable	Male (79) 'n' (%)	Female (116) 'n' (%)	Total (195) 'n' (%)
Married	54 (68.4)	39 (33.6)	93 (47.7)
Widow/widower	25 (31.6)	77 (66.4)	102 (52.3)
Education			
Illiterate	17 (21.5)	75 (64.7)	92 (47.2)
Primary	17 (21.5)	14 (12.1)	31 (15.9)
Middle school	9 (11.4)	11 (9.5)	20 (10.3)
High school	23 (29.1)	10 (8.6)	33 (16.9)
Intermediate or Diploma	7 (8.9)	3 (2.6)	10 (5.1)
Graduate or postgraduate	6 (7.6)	3 (2.6)	9 (4.6)
Type of family			
Nuclear	25 (31.6)	15 (12.9)	40 (20.5)
Joint	54 (68.4)	101 (87.1)	155 (79.5)
Socioeconomic status (B.G.Prasad) in rupees			
Class I (Rs 7487 and above)	36 (45.6)	32 (27.6)	68 (34.9)
Class II (Rs 3743-Rs.7486)	23 (29.1)	40 (34.5)	63 (32.3)
Class III (Rs 2246-Rs.3742)	14 (17.7)	29 (25.0)	43 (22.1)
Class IV (Rs 1123-Rs.2245)	4 (5.1)	14 (12.1)	18 (9.2)
Class V (Rs 1122 and below)	2 (2.5)	1 (0.8)	3 (1.5)
Status as Head of Family			
Yes	41 (51.8)	13 (11.2)	62 (31.8)
No	38 (48.2)	103 (88.8)	133(68.2)
Employment status			
Employed	16 (20.3)	5 (4.3)	21 (10.7)
Not employed	63 (79.7)	111 (95.7)	174 (89.3)
Financial dependency status			
Dependent	18 (22.8)	29 (25.0)	47 (24.1)
Not dependent	61 (77.2)	87 (75.0)	148 (75.9)
Presence of self-reported health complaint			
Yes	66 (83.5)	106 (91.4)	172 (88.2)
No	13 (16.5)	10 (8.6)	23 (11.8)
Suffering from a diagnosed Disease			
Yes	51 (64.6)	74 (63.8)	125 (64.1)
No	28 (35.4)	42 (36.2)	70 (35.9)
Physical activity			
Yes	56 (70.9)	73 (62.9)	129 (66.2)
No	23 (29.1)	43 (37.1)	66 (33.8)

Tables 3 and 4 show the association between the WHOQOL-BREF score and various demographic and socioeconomic variables in different domains of the quality of life. Table 5 shows the association

between morbidity and physical activity and WHOQOL-BREF scores.

Table 6 shows the multivariate logistic regression of the independent variable for good quality of life.

Table 3. Association of WHOQOL-BREF Score with Demographic Variables.

Factor	Quality of life scores in different domains, Mean (SD)			
	Physical health	**Psychological**	**Social relationship**	**Environment**
Age group				
60-69	62.14 (11.48)	69.63(7.82)	92.00 (12.04)	84.37 (10.79)
70-79	59.17 (11.16)	64.46 (9.02)	89.37 (12.59)	80.51 (13.01)
80-89	57.17 (10.59)	64.58 (11.18)	86.97 (13.25)	82.81 (12.70)
90 and above	55.95 (7.02)	63.83 (5.89)	88.88 (12.54)	84.34 (10.45)
F-statistic	1.878	5.641	1.182	1.363
df	3,191	3,191	3,191	3,191
p-value	0.135	0.001	0.318	0.256
Gender				
Male	60.98 (11.29)	67.72 (9.03)	90.61 (13.82)	83.70 (11.99)
Female	60.62 (11.37)	68.03 (8.52)	90.94 (11.23)	82.92 (11.35)
t- statistic	0.220	-0.241	-0.187	0.462
df	193	193	193	193
p-value	0.826	0.810	0.858	0.648
Marital status				
Married	61.94 (11.25)	69.44 (8.95)	91.66 (13.23)	84.84 (11.75)
Widow/Widower	59.69 (11.32)	66.50 (8.29)	90.03 (11.43)	81.77 (11.30)
t- statistic	1.387	2.382	0.925	1.858
df	193	193	193	193
p-value	0.167	0.018	0.356	0.064
Education				
Illiterate	58.50 (11.25)	66.71 (9.00)	89.03 (11.71)	79.75 (11.70)
Primary	61.29 (11.84)	68.14 (9.59)	91.39 (11.87)	83.36 (11.86)
Middle school	61.42 (10.78)	67.70 (7.63)	94.16 (9.78)	85.15 (8.59)
High school	60.60 (9.29)	68.30 (7.86)	91.91 (12.41)	86.07 (10.36)
Diploma or intermediate	70.35 (12.37)	72.08 (4.41)	86.66 (22.29)	89.68 (9.99)
Graduate or Postgraduate	70.63 (7.52)	73.61 (9.54)	100.00 (0.00)	96.52 (4.08)
F-statistic	3.833	1.623	2.025	5.784
df	5,189	5,189	5,189	5,189
p-value	0.002	0.156	0.077	<0.001
Type of family				
Nuclear	62.76 (10.60)	68.64 (9.94)	90.62 (15.11)	83.20 (13.96)
Joint	60.25 (11.46)	67.71 (8.39)	90.86 (11.54)	83.24 (10.95)

Factor	Quality of life scores in different domains, Mean (SD)			
	Physical health	Psychological	Social relationship	Environment
t- statistic	1.255	0.601	-0.107	-0.021
df	193	193	193	193
p-value	0.211	0.548	0.915	0.983

Table 4. Association of WHOQOL-BREF Score with Socioeconomic Factors.

Factor	Quality of life scores in different domains, Mean (SD)			
	Physical health	Psychological	Social relationship	Environment
Employment status				
Employed	64.65 (11.70)	70.40 (9.33)	89.65 (16.76)	81.35 (13.27)
Not employed	60.09 (11.14)	67.46 (8.55)	91.01 (11.42)	83.35 (11.29)
t- statistic	2.021	1.680	-0.547	-0.946
df	193	193	193	193
p-value	0.045	0.095	0.585	0.345
Status as head of family				
Head of family	62.61 (11.23)	68.84 (9.01)	89.78 (14.10)	83.15 (12.10)
Not the head of the family	59.90 (11.29)	67.44 (8.56)	91.29 (11.41)	83.27 (11.39)
t- statistic	1.561	1.071	-0.794	-0.059
df	193	193	193	193
p- value	0.120	0.286	0.428	0.953
Socioeconomic class				
Class I	62.65(11.87)	68.44(8.64)	91.05 (12.07)	86.71(10.41)
Class II	61.39 (11.27)	67.92 (8.21)	91.53 (10.84)	82.63 (12.39)
Class III	56.81 (10.93)	65.50 (9.50)	88.95 (14.85)	80.52 (12.29)
Class IV	60.51 (9.36)	71.29 (8.07)	91.66 (12.12)	78.12 (7.19)
Class V	61.76 (4.12)	67.44 (8.67)	91.00 (14.43)	86.45 (14.09)
F- statistic	1.907	1.606	0.326	3.239
df	4,190	4,190	4,190	4,190
p-value	0.111	0.175	0.860	0.013
Financial dependency status				
Dependent	58.43 (9.86)	66.75 (8.40)	89.53 (12.22)	80.45 (11.46)
Not dependent	61.51(11.67)	68.27 (8.80)	91.21 (12.36)	84.12 (11.53)
t- statistic	-1.631	-1.039	-0.812	-1.903
df	193	193	193	193
p-value	0.105	0.300	0.418	0.059

Table 5. Association of Morbidity and Physical Activity of the Participants with QOL Domains Score.

Factor	Quality of life score in different domains, Mean (SD)			
	Physical health	**Psychological**	**Social relationship**	**Environmental**
Diagnosed disease				
Present	60.51 (11.49)	67.43 (8.33)	90.40 (12.96)	83.35 (11.97)
Absent	61.22 (11.05)	67.53 (9.35)	91.54 (11.12)	83.43 (10.97)
t-statistic	-0.420	-1.012	-0.623	-0.181
df	193	193	193	193
p-value	0.675	0.313	0.534	0.856
Life affected by health condition				
Affected	56.50 (12.41)	64.48 (10.26)	85.86 (12.90)	79.29 (12.2)
Not affected	62.48 (10.40)	69.12 (7.71)	92.80 (11.53)	84.82 (10.95)
t-statistic	-3.432	-3.146	-3.67	-3.077
df	193	193	193	193
p-value	0.001	0.002	<0.001	0.002
Physical activity				
Adequate	66.54 (11.31)	68.99 (8.03)	92.57 (11.70)	85.02 (10.63)
Inadequate	57.30 (10.56)	65.78 (9.62)	87.34 (12.84)	79.73 (12.63)
t-statistic	3.127	2.465	2.838	3.082
df	193	193	193	193
p-value	0.002	0.015	0.005	0.002

Table 6. Multivariate logistic analysis of independent predictors for good quality of life.

Parameter	Exposure level	Crude OR (CI)	aOR (CI)	p-value
Age	-	0.95 (0.92-0.99)	0.97 (0.93-1.01)	0.014
Gender	Male	2.00 (1.12-3.59)	1.05 (0.45-2.42)	0.201
	Female	1	1	
Marital status	Married	2.79 (1.56-4.98)	1.94(0.98-3.86)	0.056
	Widow/widower	1	1	
Type of family	Nuclear	1.72 (0.85-3.50)	1.15 (0.48-2.79)	0.744
	Joint/extended	1	1	
Head of family	Yes	1.85 (1.00-3.42)	0.98 (0.41-2.32)	0.972
	No	1	1	
Literacy	Illiterate	0.29 (0.16-0.53)	0.37 (0.18-0.73)	0.005
	Literate	1	1	
	Yes	4.07 (2.13-7.78)	3.07 (1.52-6.18)	0.002

Parameter	Exposure level	Crude OR (CI)	aOR (CI)	p-value
Physical activity	No	1	1	
Presence of a health complaint	Yes	2.10 (0.84-5.22	0.54 (0.20-1.46)	0.108
	No	1	1	

DISCUSSION

Most participants (62.6%) in the study were aged 60 to 69. All of the individuals were of the Hindu religion. Females (59.5%) were more numerous than males in the study. Around half of the participants were widows or widowers (52.3%), while the rest were married (47.7%). The majority of participants (47.2%) were illiterate, and the majority of literate participants had a high school diploma; 79.5% were living in joint families. Only 32.8% of the elderly participants were acting as heads of the family, as with age, the elderly in the family transferred their duties to their elder/eligible son. The majority (34.9%) of the participants were from the upper class of the modified B. G. Prasad SES scale. In a rural area of Ambala, it became apparent that the highest number of participants belong to age group of 60 to 69 years; the majority were currently married (60.8%), illiterate (63.9%), supported by family (61.97%), Hindu (90%) and lived in joint families (72.7%) (Qadri et al., 2013) In a rural area of Kerala, the participants' average age was 69.75 years. Similar to this study, the majority were females, living in joint families, while 33.18% were illiterate and 66.7% were living with partners (Thadathil, Jose and Varghese, 2015). Another study conducted in a rural area of Etawah found that the study's participants were primarily male, with the majority of them being under 75 years of age. The majority were illiterate, living in joint families, and currently married (Bansal et al., 2019). Similarly, in a study of the rural part of Jammu, the majority of participants were between the ages of 60 and 70, and females were the majority in the study area. More than half of the study participants were Hindu and currently married. Most of the study participants were illiterate, and those who were educated were mainly in the 10th grade (Kumari et al., 2018). Research conducted in the urban region of Puducherry showed that the maximum number of study participants was 60 to 69 years old. Most participants were literate, female, staying in nuclear families, and living with partners. 50.48% of participants had pensions (Ganesh Kumar, Majumdar and Pavithra, 2014).

In the present study, the scores for each domain, i.e., physical health, social relationships, psychological, and environment, were 60.76(11.31), 90.81(12.31), 67.90(8.71), and 83.23(11.59), respectively. The physical health domain had the lowest score of all the domains. It may be due to the fact that as age increases, health issues rise among the elderly. A study of rural area Ambala, Haryana, had comparable scores in each domain of QOL, i.e., physical health: 74.29(10.38), psychological: 80.29(10.38), social relationship: 88.25(12.38), and environment: 74.29(10.38), because the study was carried out in a rural area with a comparable geographic location. (Qadri et al., 2013).

A study of the rural area of Karnataka had low scores compared to the present study, i.e., physical health: 63.5(12.2), psychological: 58.0(11.2), social relationship: 61.7(11.2), and environment: 60.6(10.8) (Shahul Hameed et al., 2014) This could be because the vast majority of older people in the Karnataka study possessed Below Poverty Line (BPL) cards. In a study of rural areas of Tamil

Nadu, the elderly had a low QOL score as compared to the present study, i.e., physical: 51.18(12.72), psychological: 46.68(14.79), social relationship: 45.60(13.09), and environmental: 53.66 (9.28) (Praveen and M, 2016) This could be because nearly half of the elderly in the Tamil Nadu study were working as labourers, and there was also a geographical difference.

Similarly, in a study of the rural part of Tripura, the elderly had a low QOL score as compared to the present study, i.e., psychological – 44.29(11.50), social relationship – 67.32(15.30), and environment – 51.64(10.11) (Karmakar et al., 2018). In a study of Uttar Pradesh, participants had lower scores than our study, i.e., physical health-54.17(12.73), psychological- 53.63(10.9), social relationship- 62.34(15.33), and environment- 57.6 (14.34). This may be because the availability of healthcare services is higher in Delhi than in Uttar Pradesh. Although social relationships have the highest score, this is similar to our study. (Varghese et al., 2020) In a study of Haryana, authors find out QOL scores, i.e., physical health - 50.47(27.77), psychological health - 47.44(23.26), social relationship - 52.79(22.91), and environment domain - 44.78(23.41). This study has a lower score compared to the present study, as the study was carried out in the most backwards district, leading to low access to the health care system. Studies show that the social relationship domain has the highest score out of all domains, as in our study (Singh et al., 2022).

Multivariate analysis shows that physical activity and literacy were independently associated with good quality of life. In a study of the rural part of Haryana, multiple regression shows that older age, without spouse, chronic disorder, male, no schooling, and low socioeconomic status were independently associated with poor QOL (Singh et al., 2022) In another study, residence and morbidity status show an independent association with QOL scores (Kumari et al., 2018) The above finding may be because the study population consists of both rural and urban populations. In a study of South India, education status (literate vs illiterate) was statistically significant in all domains of QOL in logistic regression. At the same time, gender was associated with all domains except the psychological domain (Krishnappa et al., 2021). However, these findings are related to the urban setting and the southern part of India, which had a higher literacy rate and different health services compared to our study of northern India. Our study found that physical activity was a significant predictor of good QOL, with participants engaging in physical activity showing 3.07 times higher odds of good QOL than those who did not (aOR = 3.07, CI: 1.52-6.18, p = 0.002). This may be because physical activity may improve QOL by reducing the risk of chronic illnesses, enhancing mental health, and fostering social interaction. Literacy status was also a significant predictor of good QOL, i.e., literate participants had 0.63 times higher odds of having good QOL as compared to illiterate participants. (aOR = 0.37, CI: 0.18-0.73, p = 0.005). The analysis revealed a negative association between age and QOL, with increasing age being associated with reduced odds of good QOL (crude OR = 0.95, CI: 0.92-0.99, p = 0.014). This may be due to the fact that with advancing age, the accumulation of chronic illnesses, functional decline, and dependency on caregivers may contribute to the observed decline in QOL. Although age was a significant predictor in bivariate analysis, its effect diminished in multivariate regression, suggesting that its impact may be mediated by other factors such as physical activity or literacy.

CONCLUSIONS

The current study found that the social relationship domain had the highest score, whilst the domain of physical health

had the worst score. A higher social relationship score might reflect the high social interaction and helpful nature of people in rural areas, which allows a person to have better social relationships. The lowest score was observed in the physical health domain because with increasing age, elderly people are more prone to health conditions (self-reported health conditions and diagnosed diseases). Although approximately two-thirds of the participants were doing physical activity, the remaining elderly can be motivated to exercise by health workers using IEC. The significant association between literacy and QOL underscores the need for educational and literacy programs in rural areas. Establishment of a healthcare centre that can deliver comprehensive care (medical care/ psychosocial care/ rehabilitative care) to the elderly so that their quality of life can improve. Establishing support groups and counselling centres can deliver or improve these activities. These can be further investigated through a qualitative study design in the study area, which will give a better understanding of the topic.

Strength: The sample size was adequate for generalizability to the study population.The compliance of the study participants was good because of the presence of the department's health centre in the study area. The study was conducted in a community setting, which enabled the subjects to be comfortable during the interview process, thus improving the quality of responses. A WHO-validated questionnaire was used to determine quality of life. A general physical examination was conducted for all subjects, and appropriate health advice was provided. Wherever needed, referrals to nearby health facilities were made**.**

Weakness: The data was collected through a history collection by elderly participants; hence, recall bias is possible. The WHOQOL-BREF scale has no cut-off for quality of life to be labelled as good or bad. It only gives a score out of 100; the higher the score, the better the quality of life. Misreporting and overreporting might increase with age and vary significantly with the disease. The current study was done in a rural area, so it cannot be fully extrapolated to urban areas. The sample size was calculated for a descriptive study design to generate a hypothesis and not for testing a hypothesis.

Policy implications: The findings of this article highlight a few critical considerations for policymakers to improve the quality of life for the elderly. The elderly who do physical activity regularly have a good quality of life. So, there is a need to strengthen guidance regarding physical activity and its dissemination among beneficiaries. Strengthening of the education system is also needed, as the elderly who were literate had a better quality of life than others.

REFERENCES

Bansal, P., Dixit, A.M., Jain, P.K., Gupta, S.K., Bajpai, P.K. and Mehra, J., 2019. Assessment of quality of life among elderly population of rural areas of Etawah district: a cross sectional study. International Journal Of Community Medicine And Public Health, 6(5), p.1965. https://doi.org/10.18203/2394-6040.ijcmph20191617

Centers for Disease Control and Prevention, 2024. Health-related Quality of Life (HRQOL): Variation across occupation groups. [online]

Ganesh Kumar, S., Majumdar, A. and Pavithra, G., 2014. Quality of Life (QOL) and Its Associated Factors Using WHOQOL-BREF Among Elderly in Urban Puducherry, India. Journal of clinical and diagnostic research : JCDR, [online] 8(1), pp.54–57. https://doi.org/10.7860/JCDR/2014/6996.3917

Harwood, R.H., Sayer, A.A. and Hirschfeld, M., 2004. Current and future worldwide prevalence of

dependency, its relationship to total population, and dependency ratios. Bulletin of the World Health Organization, [online] 82(4), p.251.

Indrayan, A., 2006. Basic Methods Of Medical Research. 1st ed. New Delhi: AITBS publishers.

Ingle, G. and Nath, A., 2008. Geriatric health in India: concerns and solutions. Indian journal of community medicine : official publication of Indian Association of Preventive & Social Medicine, [online] 33(4), p.214. https://doi.org/10.4103/0970-0218.43225

Kapoor, A., Sharma, D., Sinha, H., Jain, P., Zutshi, S. and Basu, S., 2021. Index on Quality of Life for Elderly, Report to Economic Advisory Council to Prime Minister(EAC-PM).

Karmakar, N., Datta, A., Nag, K. and Tripura, K., 2018. Quality of life among geriatric population: A cross-sectional study in a rural area of Sepahijala District, Tripura. Indian journal of public health, [online] 62(2), pp.95–99. https://doi.org/10.4103/ijph.IJPH_121_17

Krishnappa, L., Gadicherla, S., Chidambaram, P. and Murthy, N.S., 2021. Quality of life (QOL) among older persons in an urban and rural area of Bangalore, South India. Journal of Family Medicine and Primary Care, 10(1), pp.272–277. https://doi.org/10.4103/jfmpc.jfmpc_1241_20

Kumari, R., Dewan, D., Langer, B., Kumar Gupta, R. and Singh, P., 2018. Quality of Life and Its Associated Factors: A Comparative Study among Rural and Urban Elderly Population of North India. National Journal of Community Medicine | Volume, [online] 9(6), pp.420–425.

Ministry of Statistics and Program Implementation- Government Of India, 2016. Elderly in India- 2016. [online]

Mudey, A., Ambekar, S., Goyal, R.C., Agarekar, S. and Wagh, V. V, 2011. Assessment of Quality of Life among Rural and Urban Elderly Population of Wardha District, Maharashtra, India. Studies on Ethno-Medicine, [online] 5(2), pp.89–93. https://doi.org/10.1080/09735070.2011.11886394

Office of registrar general India (ORGI) divisions- Government of India, 2011. Primary Census Abstract, 2011. [online]

Praveen, V. and M, A.R., 2016. Quality of life among elderly in a rural area. International Journal of Community Medicine and Public Health, pp.754–757. https://doi.org/10.18203/2394-6040.ijcmph20160646

Qadri, S., Ahluwalia, S., Ganai, A., bali, shalender, Wani, F. and Bashir, H., 2013. An epidemiological study on quality of life among rural elderly population of nothern India. International Journal of Medical Science and Public Health, 2(3), p.514. https://doi.org/10.5455/ijmsph.2013.2.492-500

Shahul Hameed, I., Brahmbhatt, K.R., Patil, D.C. and S, P.K., 2014. Quality of life among the geriatric population in a rural area of Dakshina Kannada, Karnataka, India Quality of life among the geriatric population in a rural area of Dakshina Kannada. [online] 3(3).

Singh, A., Palaniyandi, S., Palaniyandi, A. and Gupta, V., 2022. Health related quality of life among rural elderly using WHOQOL-BREF in the most backward district of India. Journal of Family Medicine and Primary Care, 11(3), pp.1162–1168.

https://doi.org/10.4103/jfmpc.jfmpc_1073_21

Thadathil, S., Jose, R. and Varghese, S., 2015. Assessment of Domain wise Quality of Life Among Elderly Population Using WHO-BREF Scale and its Determinants in a Rural Setting of Kerala. International Journal of Current Medical And Applied Sciences, [online] 1(7), pp.43–46.

UNFPA India, 2017. Caring for Our Elders : Early Responses India Ageing Report 2017. [online]

Varghese, B., Selvan, M., Kushwaha, D., Pathak, D., Prajapati, D., Anju, K. and Kumar, A., 2020. A comparative study to assess the quality of life among the elder people living in rural and urban areas. Indian Journal of Psychiatric Nursing, 17(1), p.18. https://doi.org/10.4103/IOPN.IOPN_3_20

World Health Organization, 2011. Global recommendations on physical activity for health. [online]

World Health Organization, 2012. WHOQOL - 100. [online]

World Health Organization, 2015. Reprinted from: World Report on Ageing and Health: Chapter 3: Health in Older Age. WHO, [online] pp.43–63.

World Health Organization, 2024. WHOQOL - Measuring Quality of Life. [online]